

AMENDMENTS TO THE CLAIMS

1. (Currently amended) A method of extraction of phytosterols, squalene and vitamin E from crude ~~[[the]]~~ palm oil comprising the steps of:

- a) conversion of the crude palm oil into palm oil methyl esters;
- b) performing three stages of short path distillation ~~[[of]]~~ on the crude palm oil methyl esters obtained in step a) to yield a phytonutrient concentrate;
- c) saponification of the phytonutrient concentrate from step b) to give a saponified product;
- d) crystallization of phytosterols obtained in step c);
- e) solvent partitioning of vitamin E and squalene from the remaining saponified product following said crystallization;

wherein each of the three stages of short path distillation produces a distillate and a residue and wherein the third stage short path distillation is carried out on the distillate produced in the second stage short path distillation.

2-7. (Cancelled)

8. (Currently amended) The method as claimed in claim 20, wherein the unsaponifiable matter is mixed with a hydrocarbon solvent, short chain alcohol and water to form a mixture, wherein the hydrocarbon solvent, short chain alcohol and water are in a ratio by volume of 25:1:1 and wherein the mixture is heated to a temperature of 65°C to 85°C and slowly cooled to a temperature of 10°C to 30°C to crystallize the phytosterol-phytosterols.

9. (Previously Presented) The method as claimed in claim 21, wherein the hydrocarbon solvent and short chain alcohol used to partition squalene and the vitamin E are in a ratio by volume of 5:3.

10. (Cancelled)

11. (Withdrawn) Vitamin E, squalene or phytosterols as extracted as in claim 1.

12. (Currently amended) The method of extraction of phytosterols, squalene and vitamin E from crude palm oil ~~as recited in claim 1~~, comprising the steps of:

- i. conversion of crude palm oil into palm oil methyl esters;
- ii. ~~the Performing a~~ first stage short path distillation ~~is carried out~~ on the crude palm oil methyl esters obtained in the step i, wherein the first stage short path distillation is carried out at a temperature of 70°C to 120°C and pressure between 10 mTorr to 50 mTorr;
- iii. ~~the Performing a~~ second stage short path distillation ~~is carried out~~ on the residue obtained in the first stage short path distillation, wherein the second stage short path distillation is carried out at a temperature of 130°C to 200°C and pressure less than 1 mTorr;
- iv. ~~the Performing a~~ third stage short path distillation ~~is carried out~~ on the distillate obtained in the second stage short path distillation, wherein the third stage short path distillation is carried out at a temperature below 120°C and pressure less than 1 mTorr;
- v. saponification of the residue obtained the third stage short path distillation to give a saponified product;
- vi. solvent extraction of unsaponifiable matter from the saponified product obtained in step v;
- vii. mixing the unsaponifiable matter obtained in step vi with a hydrocarbon solvent, short chain alcohol and water to give a mixture;
- viii. crystallization of ~~phytosterol~~ phytosterols from the mixture obtained in step vii to give crystallized ~~phytosterol~~ phytosterols and a remaining mixture;
- ix. separating the crystallized ~~phytosterol~~ phytosterols and drying the remaining mixture to give a dried mixture;

- x. mixing the dried mixture obtained in step ix with a hydrocarbon solvent and a short chain alcohol to partition the squalene into a hydrocarbon layer and the vitamin E into an alcohol layer.

13. (Cancelled)

14. (Previously Presented) The method as claimed in claim 1, wherein a hydrocarbon solvent and a short chain alcohol are used in step e) to partition the squalene into a hydrocarbon layer and the vitamin E into an alcohol layer.

15. (Previously Presented) The method as claimed in claim 14, wherein hexane and methanol are used in step e) to partition the squalene into a hexane layer and the vitamin E into a methanol layer.

16. (Currently Amended) The method as claimed in claim 1, wherein step (b) proceeds as follows:

- a. the first stage short path distillation is carried out on crude palm oil methyl esters;
- b. the second stage short path distillation is carried out on the residue of the first stage short path distillation;
- c. the third stage short path distillation is carried out on the distillate of the second stage short path distillation to yield a phytonutrients concentrate as a residue.

17. (Previously Presented) The method as claimed in claim 16, wherein the second stage short path distillation is carried out at a temperature of 130°C to 200°C and pressure less than 1 mTorr.

18. (Previously Presented) The method as claimed in claim 17, wherein the first stage short path distillation is carried out at a temperature of 70°C to 120°C and pressure between 10

mTorr to 50 mTorr and the third stage short path distillation is carried out at a temperature below 120°C and pressure less than 1 mTorr.

19. (Previously Presented) The method as claimed in claim 1, wherein unsaponifiable matter is solvent extracted from the saponified product obtained in step c) and phytosterols are crystallized from the unsaponifiable matter.

20. (Previously Presented) The method as claimed in claim 19, wherein the unsaponifiable matter is mixed with a hydrocarbon solvent, short chain alcohol and water to give a mixture and crystallizing phytosterols from the mixture to give crystallized phytosterols and a remaining mixture.

21. (Previously Presented) The method as claimed in claim 20, wherein the remaining mixture is dried and then mixed with a hydrocarbon solvent and a short chain alcohol to partition the squalene into a hydrocarbon layer and the vitamin E into an alcohol layer.

22. (Previously Presented) The method as claimed in claim 21, wherein hexane and methanol is used to partition the squalene and the vitamin E.

23. (Currently amended) The method as claimed in claim 1, wherein the crude palm oil is converted directly into palm oil methyl esters.